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[Updating temperature and salinity mean values and trends in the Western Mediterranean: The RADMED project.](#)

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Abstract: The RADMED project is devoted to the implementation and maintenance of a multidisciplinary monitoring system around the Spanish Mediterranean waters. This observing system is based on periodic multidisciplinary cruises covering the coastal waters, continental shelf and slope waters and some deep stations (> 2000 m) from the Westernmost Alboran Sea to Barcelona in the Catalan Sea, including the Balearic Islands. This project was launched in 2007 unifying and extending some previous monitoring projects which had a more reduced geographical coverage. Some of the time series currently available extend from 1992, while the more recent ones were initiated in 2007. The present work updates the available time series up to 2015 (included) and shows the capability of these time series for two main purposes: the calculation of mean values for the properties of main water masses around the Spanish Mediterranean, and the study of the interannual and decadal variability of such properties. The data set provided by the RADMED project has been merged with historical data from the MEDAR/MEDATLAS data base for the calculation of temperature and salinity trends from 1900 to 2015. The analysis of these time series shows that the intermediate and deep layers of the Western Mediterranean have increased their temperature and salinity with an acceleration of the warming and salting trends from 1943. Trends for the heat absorbed by the water column for the 1943–2015 period, range between 0.2 and 0.6 W/m² depending on the used methodology. The temperature and salinity trends for the same period and for the intermediate layer are 0.002 °C/yr and 0.001 yr^{–1} respectively. Deep layers warmed and increased their salinity at a rate of 0.004 °C/yr and 0.001 yr^{–1}.

Keywords: Western Mediterranean, Monitoring program, Warming and salting trends, Climate change